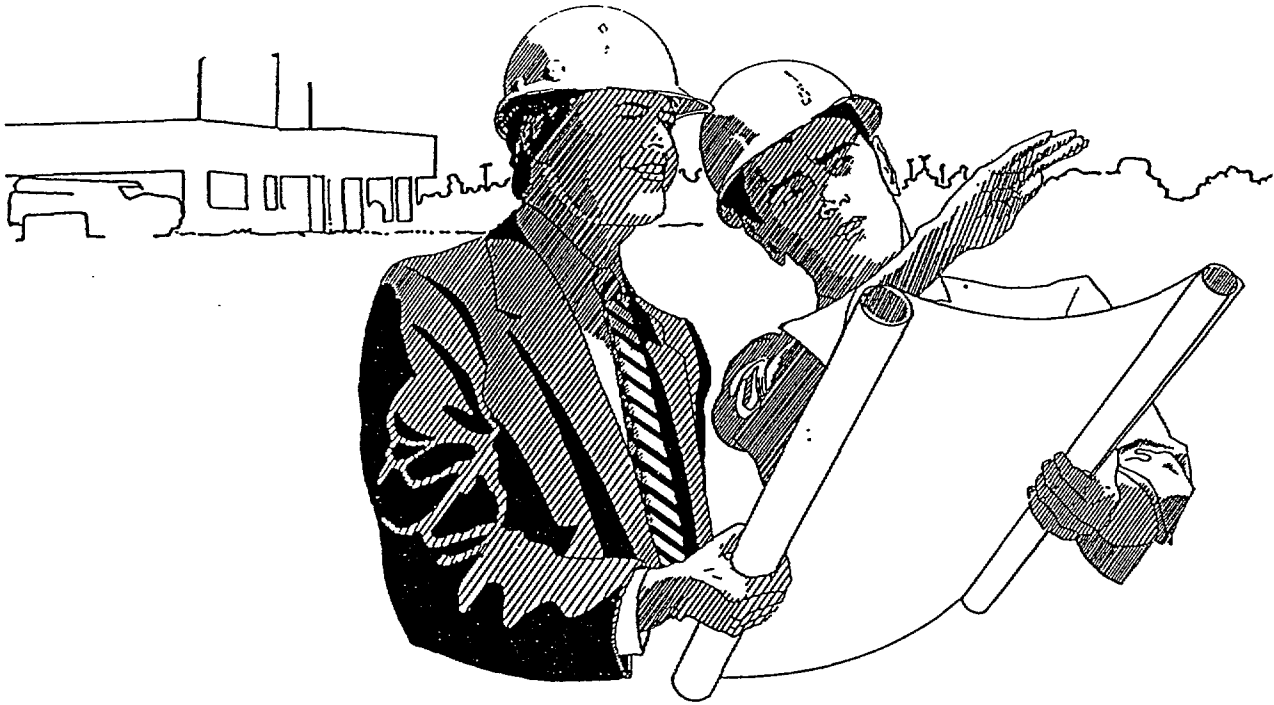




Chapter Four

DEVELOPMENT ALTERNATIVES



Chapter Four

DEVELOPMENT ALTERNATIVES

The next step in the master planning process is the identification and evaluation of development alternatives. This may be the most important step since the decisions made concerning the future development of the airport facilities will influence management of the airport's assets throughout the planning period. In evaluating the various ways facilities can be constructed, there are a number of combinations and alternatives that must be reviewed. The influence of cost, terrain, utilities, land ownership, existing facilities and a multitude of other factors requires the planner to use intuitive judgement in identifying those alternatives which provide the greatest potential for implementation.

The development alternatives for Cottonwood Municipal Airport can be categorized into two functional areas: the **airside** (airfield) and the **landside** (hangars, apron and facilities) area. Within each of these areas, specific facilities are required

or desired. Although each functional area is treated separately, planning must integrate the individual requirements so that they complement one another.

There will be limitations imposed on the potential construction of these facilities by the factors mentioned previously (terrain, costs, utilities, etc.). The total impact of all of these factors on the existing airport must be evaluated to determine if the investment in Cottonwood Municipal Airport will meet the needs of the citizens of the community during and beyond the planning period.

Before consideration can be given to development, consideration must also be given to a "do nothing" or "no build" alternative as well as the possibility of relocating the airport to another site altogether. Since these alternatives are not without major impacts and costs to the public, they will be addressed in the section that follows.

THE DO NOTHING ALTERNATIVE

The Do Nothing alternative involves maintaining the airport in its present condition and not providing the facility improvements recommended in the previous chapter. With this alternative, maintenance activities would continue, however, new facilities would not be built.

The Do Nothing alternative would restrict the capabilities of Cottonwood Municipal Airport to accommodate future aviation demands and further enhance economic development of the region. On the other hand, with the growth of the adjacent industrial business park, the airport could become a major asset to the continual development of the area.

While the Do Nothing alternative might be considered the best alternative from a purely environmental standpoint, and one which would require the least amount of financial commitment to implement, the Do Nothing alternative was not considered to be preferable since it ultimately would limit the airport's ability to serve anticipated aviation demand within the area.

SERVICE FROM ANOTHER AIRPORT

A review of existing airports within the region was conducted to determine the potential to accommodate some of the aviation demand currently being experienced, as well as that anticipated during the 20-year planning period, at the Cottonwood Municipal Airport.

The only airport within 20 miles of Cottonwood Municipal Airport is Sedona Airport. Although this airport has the potential to serve the Cottonwood market,

the potential for expansion of its facilities and services is somewhat limited due to terrain constraints around the airport property.

The air transportation system within the Verde Valley area provides geographically desirable access to aviation facilities and services for most of the communities within the region. If Cottonwood Municipal Airport was abandoned, a major portion of the aviation facilities within the region would be eliminated and ease of access to the air transportation system would be negatively affected for a large number of the region's users. Transferring services from Cottonwood Municipal Airport to another airport would decrease the availability, quantity, and convenience of aviation facilities in the area and, therefore, would be expected to hinder the area's potential for economic development.

DEVELOPMENT OF A NEW AIRPORT

The alternative of constructing an entirely new airport to meet area aviation demand was also considered. The first consideration was the environmental impacts that would result from the development of a new airport within the region. Due to the level of development that would be required with this alternative, these impacts would be significantly greater than those anticipated with any of the proposed development alternatives for Cottonwood Municipal Airport.

It is also important to consider the existing industrial airpark located adjacent to the airport. While the airpark helps ensure the development of compatible land uses around the airport, the airport's proximity provides these tenants with a convenient

mode of transport for employees, supplies and products. A substantial commitment of time, natural resources and public and private funds, is reflected in the existing airport and airpark. The duplication of these facilities at a different site would represent a tremendous financial commitment for land acquisition, site preparation, and construction of the airport facilities.

No advantages were identified with this alternative. This alternative was not considered to be preferable because the closing of Cottonwood Municipal Airport would result in the loss of a substantial investment in an existing, and increasingly important transportation facility, and would be expected to result in more significant environmental consequences.

AIRPORT DEVELOPMENT CONCEPTS

Any development proposed as part of a master plan must be evolved from an analysis of projected needs for a set period of time. Even though the needs were determined by the best methodology available, it cannot be assumed that future events will not change these needs.

The master planning process attempts to develop a viable concept for meeting the anticipated needs for the planning period. No concept should be adopted that would preclude expansion beyond the 20-year period or that would require expansion commitments prior to certainty of need. This desired flexibility becomes one of the key considerations in the development and evaluation of both airside and landside concepts at Cottonwood Municipal Airport.

AIRSIDE CONCEPTS

Airside facilities are by nature the focal point of the airport complex. Because of their primary role and the fact that they physically dominate airport land use, airside requirements are the most critical input to the identification of reasonable alternatives.

After analysis of the existing runway length, it was determined that due to terrain constraints to the north and residential development to the south, that no increase in runway length would be feasible at this time. Therefore, none of the alternatives considered in this chapter feature this extension. It is important to note, however, that while the runway could be extended to the north in the future, the extension would involve significant costs for earthwork and roadway relocation.

Consistent with the facility needs identified in the previous chapter and input from the Planning Advisory Committee, two airside concepts were developed for Cottonwood Municipal Airport. The two concepts address the location of the parallel taxiway. One of the concepts would involve the extension of the existing parallel taxiway and would support Airport Reference Code B-I category aircraft as previously discussed in Chapter Three. The second concept would involve the relocation of the parallel taxiway in order to increase the separation distance between the runway and taxiway centerlines in accordance with the separation standards for B-II category aircraft. With the B-II standards, the airport could accommodate a larger mix of aircraft, such as larger twin-engine aircraft and small business jet aircraft. Both concepts would involve upgrading of runway and taxiway pavement strengths to meet the strength

requirements associated with the type of aircraft expected to utilize the airport under each concept.

LANDSIDE CONCEPTS

For each of the previously discussed airside concepts, two compatible landside concepts were developed. Each of these concepts incorporates the following facility expansions or development items:

- ◆ T-Hangars
- ◆ T-Shades
- ◆ Apron Tiedowns
- ◆ General Aviation Terminal
- ◆ Fuel Storage Relocation
- ◆ Conventional Hangar Area
- ◆ Airport Service Road
- ◆ Future Aviation Related Expansion
- ◆ Commercial/Industrial Development

Some development items common to each alternative are the general aviation terminal building, parking facilities, the relocation of the fuel storage facilities, commercial/industrial development area, and future aviation related expansion area.

Existing designs for a 1,700 square foot terminal building and a 45 space parking facility were analyzed for their compatibility with the facility requirements developed in Chapter Three. Based on this analysis, it was determined that the terminal building and parking area could meet the airport's facility requirements through most of the planning period. It is important, however, to periodically examine terminal and parking facilities with regard to their ability to meet actual, rather than projected growth.

The relocation of fuel storage facilities to the west side of the runway is also common to all alternatives. The fuel storage facility

should utilize above-ground storage tanks capable of being moved (placed on skids), in order to accommodate future landside expansion.

As demand arises, the development of additional conventional hangar area will also be required. Each alternative designates areas for future conventional hangar development.

Another item common to each alternative is the development of an airport service road. The service road would provide access to the newly developed apron area and the lighted windcone/segmented circle. The location of the service road would be dependent upon the particular airport development alternative selected.

Each alternative reserves space for commercial/industrial development and future aviation related expansion. One area reserved for future commercial/industrial development is located on the east side of the airport property. A planned extension of Airpark Road to Cottonwood Street, would provide access to designated parcels within this area. Property on the west side of the airport has been designated for new aviation related development, future aviation related expansion and additional commercial/industrial development.

AIRPORT DEVELOPMENT ALTERNATIVES

In the evaluation of facility needs at Cottonwood Municipal Airport, different airside and landside concepts were combined into four airport development alternatives. Each alternative is a combination of those airside and landside concepts, which provide for the future development at the Cottonwood Municipal Airport. The four alternatives examined are

presented in the following paragraphs and exhibits.

Airport Development Alternative A

Airport Development Alternative A, as illustrated in Exhibit 4A, would develop the Cottonwood Municipal Airport to serve those aircraft which are classified as B-I category small aircraft. As identified in Chapter Three, B-I category small aircraft would consist of those aircraft with wingspans under 49 feet, approach speeds less than 121 knots, and weights less than 12,500 pounds.

In this alternative, the parallel taxiway remains in the current location, 150 feet from the runway centerline to the taxiway centerline. This alternative would include a 650 foot extension of Taxiway A, between Taxiway B and Taxiway C. The separation of 150 feet limits the use of the airport to those aircraft in the B-I small aircraft category.

With this alternative, the pavement strength of the runway and taxiway should be 12,500 pounds SWL. This pavement strength would accommodate all aircraft in the B-I small airplane category.

The landside development consists of expansion of the apron area to the south, providing an additional tiedown and T-shade area. In addition to the expanded apron area, eight T-shades would be added to the existing twelve shades, which would satisfy the demand forecast for these facilities.

Also planned are T-hangar facilities, which will be located on the west side of the existing apron. The hangars in this area will be privately owned and constructed on leased land. The addition of all these

facilities will meet the facility requirements throughout the planning period.

Airport Development Alternative B

The airside development of Airport Development Alternative B, as illustrated in Exhibit 4B, is identical to that of Alternative A. It also limits the airport to B-I category small aircraft, it includes a 650 foot extension to Taxiway A, and would require a pavement strength of 12,500 pounds SWL.

Alternative B, however, provides a different landside facility layout by arranging the tiedowns and T-shades facing north and south. This alignment provides for transient tiedowns in the existing apron area and local tiedowns in the newly developed area.

Like Alternative A, the privately owned T-hangar facilities have been located on the west side of the existing apron. This alternative also satisfies the facility requirements established in Chapter Three.

Airport Development Alternative C

Airport Development Alternative C, depicted in Exhibit 4C, deviates from Alternative A and B, in that it would modify the airport to serve those aircraft in the B-II category. This category includes aircraft with wingspans up to 79 feet but with weights greater than 12,500 pounds.

This alternative would require that the parallel taxiway be relocated 90 feet west, providing a 240 foot separation between the runway centerline and the taxiway centerline. This separation standard would allow Cottonwood Municipal Airport to serve the larger B-II category aircraft.

With this alternative, the pavement strength of the runway and the taxiway would be maintained at approximately 24,000 pounds SWL to accommodate those aircraft over 12,500 pounds. These include larger twin engine aircraft (such as the Beech 1900C at 16,600 pounds, and the BAe Jetstream 31 at 14,550 pounds) and some small business jet aircraft (such as the LearJet 28/29 at 15,000 pounds, the Cessna Citation III at 22,000 pounds, and the Rockwell Sabre 65 at 24,000 pounds).

The existing tiedowns and T-shades would need to be relocated outside of the new taxiway object free area in order to provide the standard B-II clearance requirements in the aircraft parking area. The existing T-shades along with new tiedowns and T-shades would be located south of the existing apron, outside the new taxiway object free area. As with Alternative A and B, the privately-owned T-hangar facilities would be located on the west side of the existing apron. Alternative C would satisfy the facility requirements established in Chapter Three.

Airport Development Alternative D

The airside concept of Airport Development Alternative D, as illustrated in Exhibit 4D, is identical to Alternative C. It provides for aircraft in category B-II by relocating the parallel taxiway to the 240 foot separation standard. The pavement strength of the runway and the taxiway would be maintained at approximately 24,000 pounds SWL to accommodate those larger twin-engine and the small business jet aircraft over 12,500 pounds.

With regard to the landside concept, the existing tiedowns and T-shades would need

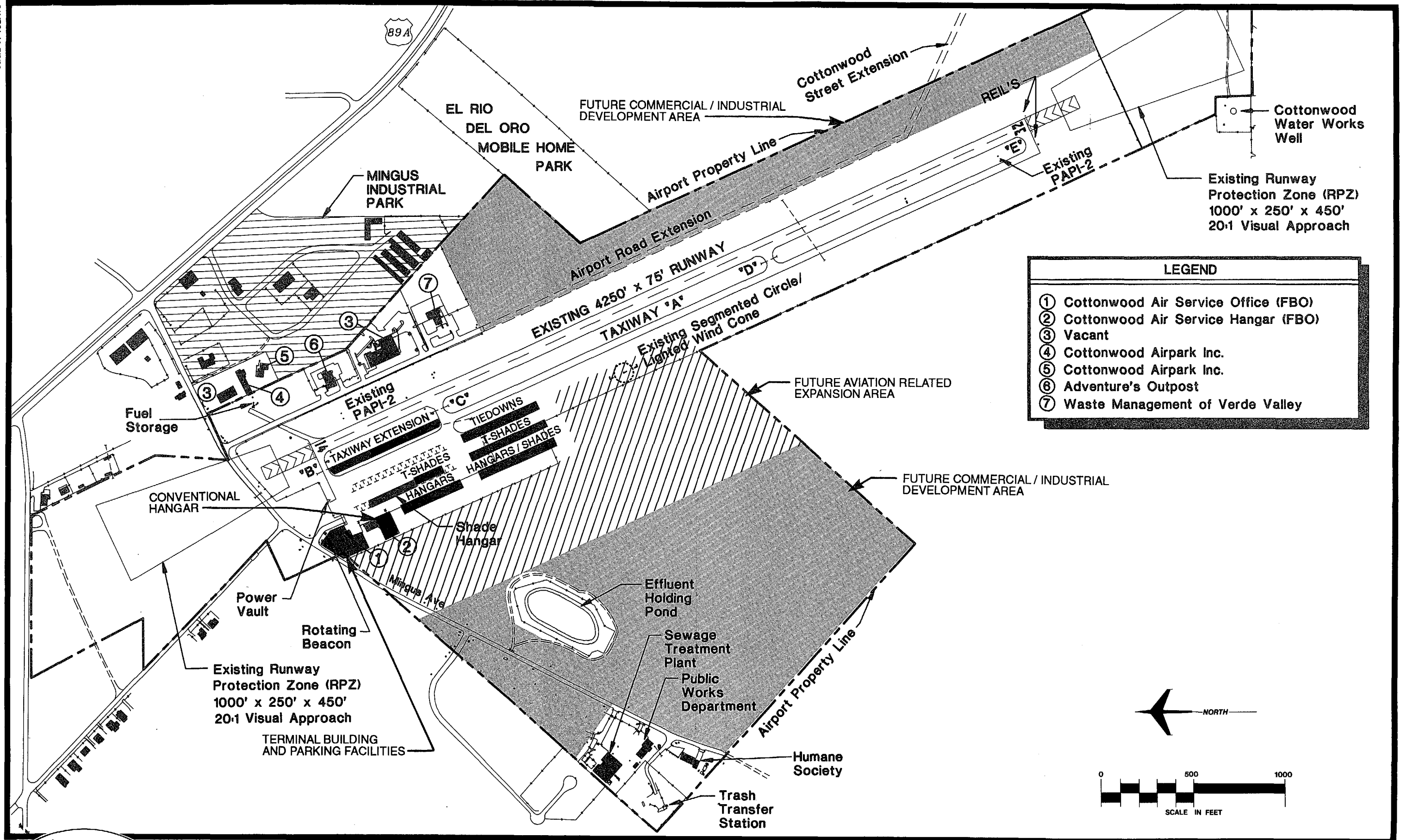
to be relocated outside the new taxiway object free area. These facilities would be oriented facing east and west. This alignment would provide for more conventional hangar development area west of the existing conventional hangar. Automobile access off Mingus Avenue from the north could be provided to this newly developed conventional hangar and tiedown area.

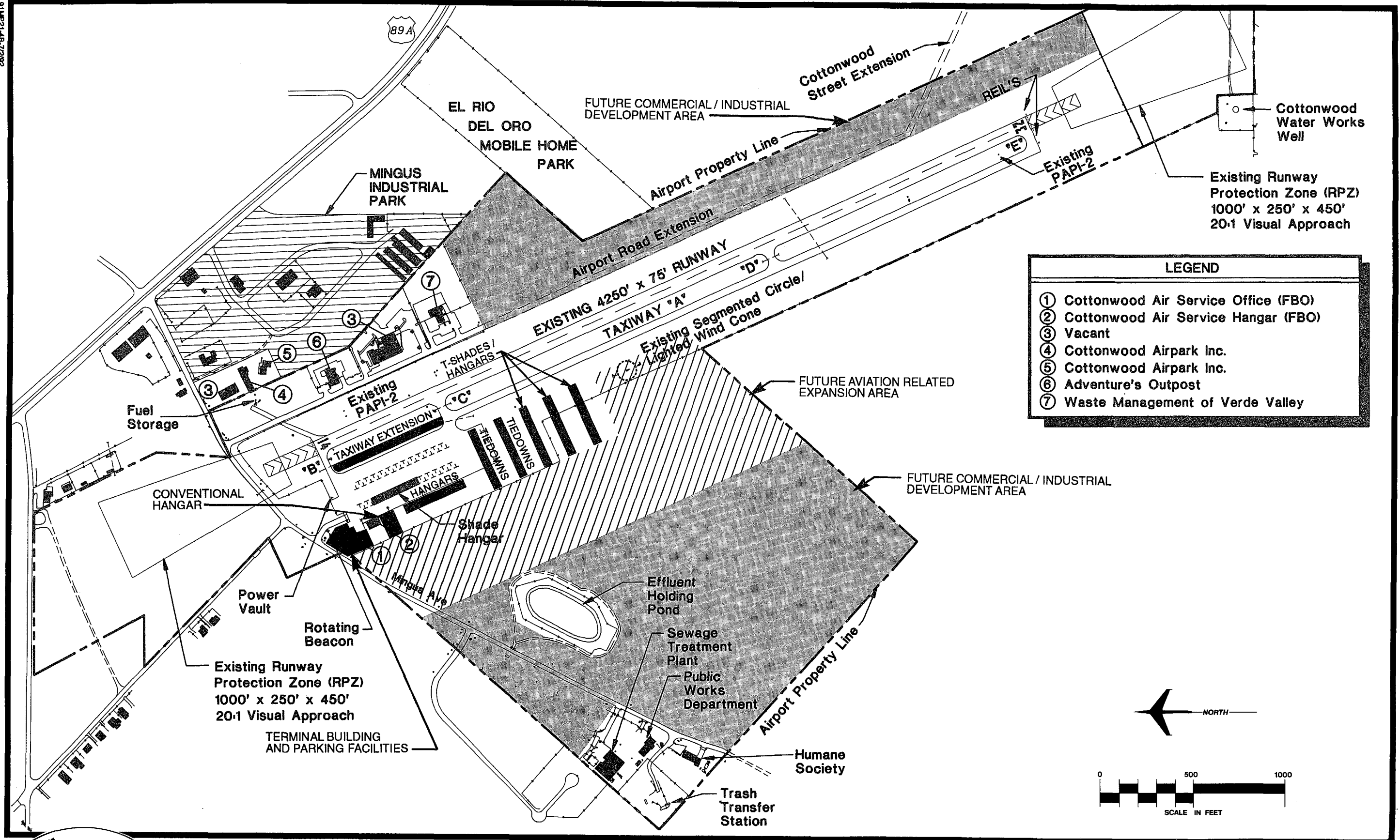
Due to terrain sloping west to east, Alternative D would require extensive earthwork in the area west of the existing apron. This area has an approximate twenty-foot differential between the existing apron and the west edge of the proposed apron/hangar development area. By aligning the aircraft parking facilities in an east west orientation, less earth work would be required to meet appropriate FAA gradient standard.

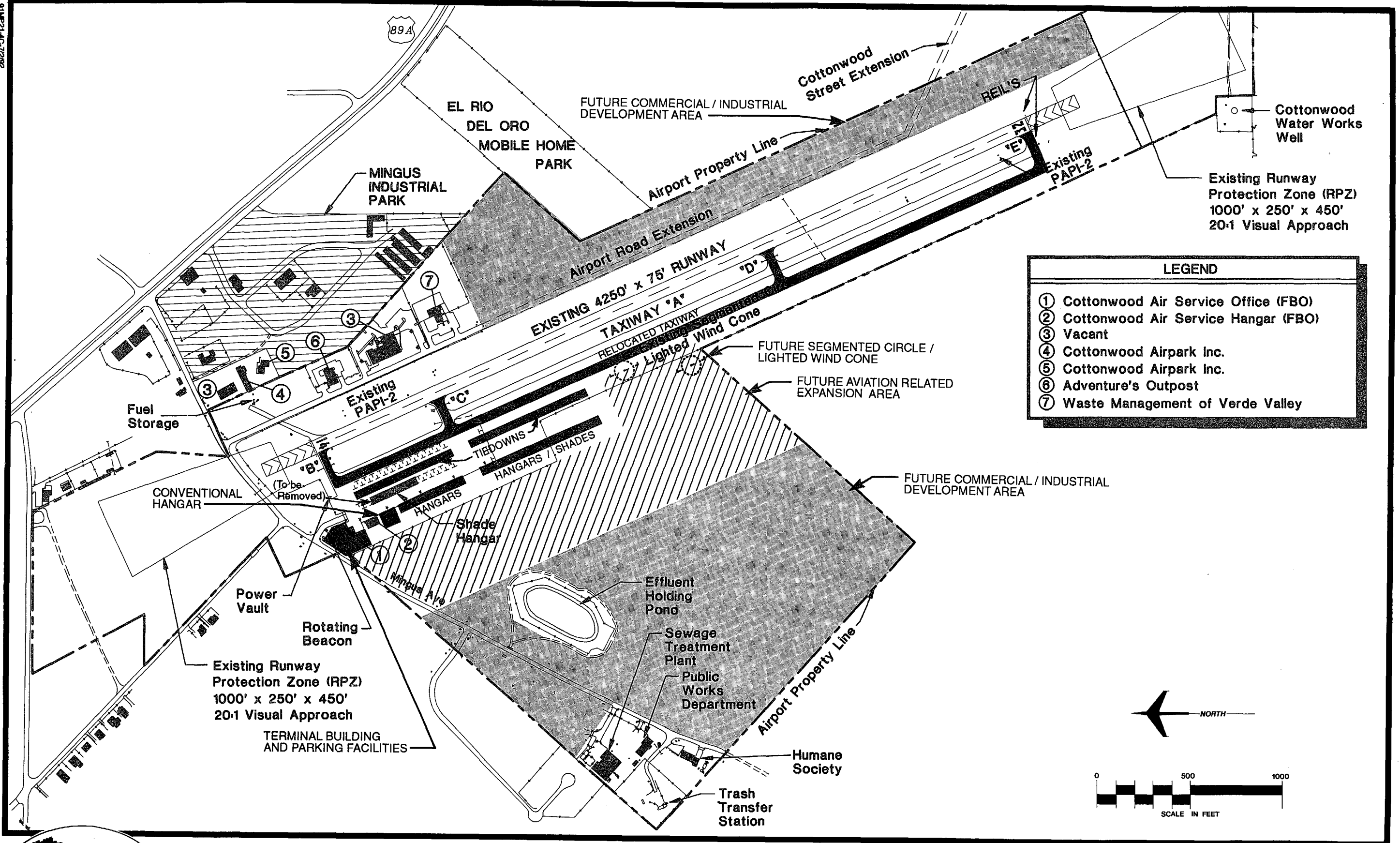
With this alternative, the privately-owned T-hangars planned for construction on the west edge of the existing apron would need to be relocated to this newly developed area. These relocations are necessary to meet the FAA Aircraft Parking Area Separation Standards. The development and relocation of all these facilities will meet the facility requirements established in Chapter Three.

Airport Development Costs

Table 4A compares "order of magnitude" development costs for the four airport development alternatives. They reflect general cost estimates for site preparation, airside development, and landside development and should be used for comparison purposes only.







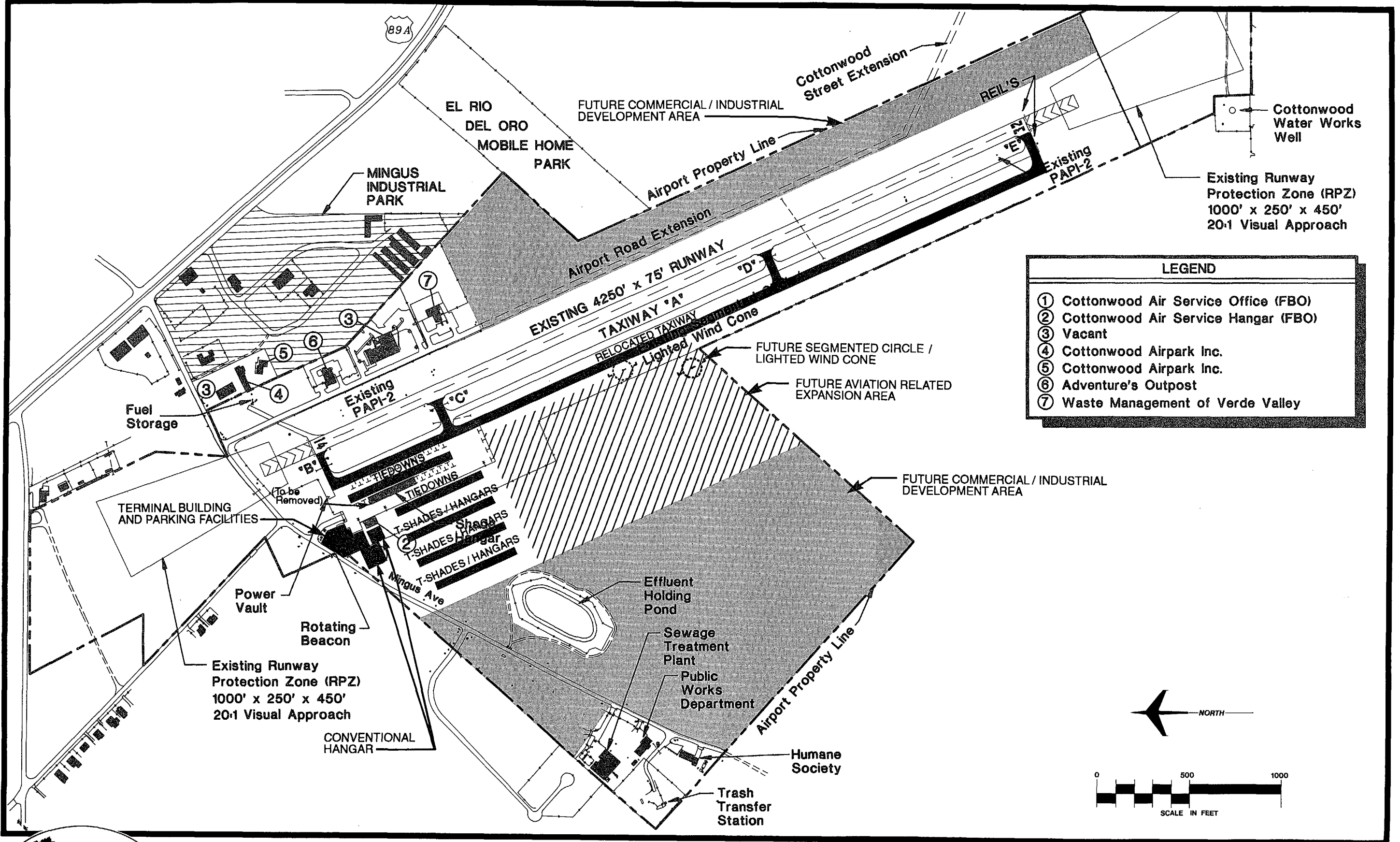


TABLE 4A
 Airport Development Cost Comparison
 Cottonwood Municipal Airport

<u>Item</u>	<u>Alternatives</u>			
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
Airside Development				
Clearing and Grubbing	\$6,000	\$6,000	\$32,000	\$32,000
Drainage	33,000	33,000	175,000	175,000
Taxiway Extension	188,000	188,000	0	0
Taxiway Relocation	0	0	1,012,000	1,012,000
Taxiway Lighting	130,000	130,000	130,000	130,000
Install REILS-Runway 34	15,000	15,000	15,000	15,000
Runway Markings	25,000	25,000	25,000	25,000
Windcone/Segmented Circle Relocation	0	0	5,000	5,000
Landside Development				
Clearing and Grubbing	\$30,000	\$50,000	\$60,000	\$150,000
Terminal Building	213,000	213,000	213,000	213,000
Automobile Parking	30,000	30,000	30,000	30,000
Fuel Farm	100,000	100,000	100,000	100,000
Apron Area	560,000	700,000	700,000	1,100,000
Hangars/T-shades	780,000	780,000	780,000	780,000
Utilities	75,000	100,000	75,000	150,000
Subtotal	\$2,185,000	\$2,370,000	\$3,352,000	\$3,917,000
Engineering and Contingencies	\$546,000	\$593,000	\$838,000	\$979,000
TOTAL	\$2,731,000	\$2,963,000	\$4,190,000	\$4,896,000

Notes: (1) Airport service road development cost not included.

Recommended Airport Development Alternative

The primary issue associated with the selection of an alternative at Cottonwood Municipal Airport, is the location of the parallel taxiway. To provide the greatest potential for future growth at the airport, the taxiway would need to be relocated, providing the separation standards for B-II category aircraft. This would allow larger commuter and business type aircraft to utilize the airport in the future. By accommodating only the B-I small airplane category, the Cottonwood Municipal Airport may not be capable of accommodating a larger variety of commuter and business type aircraft.

Although, the majority of the aircraft presently utilizing the airport are B-I category aircraft, it is recommended that Cottonwood Municipal Airport allow for future expansion by selecting Airport Development Alternative C. This alternative will allow B-II category aircraft to utilize the airport and provide for future airport expansion.

With input received from the PAC, Alternative C was accepted as the recommended alternative, however, the

aircraft weights were limited to 12,500 lbs. or less. If larger aircraft (weights up to 30,000 lbs.) begin to utilize the airport in the future, the existing pavement strength of the runway could accommodate these aircraft.

SUMMARY

This chapter has examined four airport development alternatives incorporating different airside and landside concepts which would meet the facility requirements throughout the planning period. Current airport design standards were considered throughout the analysis of each concept and alternative. Safety, both air and ground, were given highest priority in the analysis of the four alternatives presented.

The combination of the airside and landside concepts in Airport Development Alternative C would enhance the airport's ability to accommodate all the forecast demands and respond to the potential of future commuter service. With these capabilities realized, Cottonwood Municipal Airport will continue to be an asset to the region and a source of pride to the community.